

LUNAR HALOS.

Lunar halos have been observed in the various districts on the following dates:

New England.—11th, 15th, 17th, 18th, 19th.

Middle Atlantic states.—1st, 11th, 13th, 14th, 17th to 21st, 25th, 29th, 30th.

South Atlantic states.—11th, 13th, 16th, 17th, 19th, 20th.

Florida peninsula.—10th, 13th, 14th, 17th, 19th, 20th, 22d, 24th, 27th.

Eastern Gulf.—12th, 14th, 16th, 19th, 25th.

Western Gulf.—10th to 16th, 18th, 21st to 24th.

Ohio valley and Tennessee.—4th, 9th, 14th, 16th to 20th, 24th, 25th.

Lower lakes.—13th, 15th, 17th, 18th, 19th, 28th.

Upper lakes.—2d, 13th, 14th, 17th, 18th, 21st, 23d.

Upper Mississippi valley.—12th, 14th, 15th, 16th, 18th, 22d, 24th, 29th.

Missouri valley.—11th, 15th, 16th, 23d, 24th.

Northern slope.—14th to 17th, 20th, 22d.

Middle plateau.—15th, 16th, 18th, 21st.

Lunar halos were also observed at the following stations not included in the districts named above: Tucson, Arizona, 22d; Yuma, Arizona, 15th; Sacramento, California, 11th; San Francisco, California, 13th; Visalia, California, 10th; Fort Stevenson, Dakota, 13th, 14th; Saint Vincent, Minnesota, 13th, 14th, 19th; Santa Fé, New Mexico, 22d; Eagle Pass, Texas, 13th, 15th, 21st; Uvalde, Texas, 15th; Spokane Falls, Washington Territory, 21st.

MIRAGE.

New Haven, Connecticut, 3d.—During the afternoon mirage was observed on Long Island sound, objects appearing elevated and inverted. Faulkner's Island light-house appeared to be resting on the surface of the water, while the base of the island seemed to be floating in the air at an elevation of one hundred feet.

Cape May, New Jersey, 8th.—Mirage was observed from 3 to 4 p. m. Vessels with inverted images appeared at elevations of from fifty to seventy-five feet and were distinctly seen at a distance of ten miles. The Brandywine light-house, eight miles distant, appeared as three structures, one above the other, the second being inverted and the top one apparently one hundred and fifty feet high.

Buffalo, New York, 10th.—At 6.15 p. m. the trees on the Canadian side of the river appeared several degrees above the horizon.

Alexandria, Dakota, 6th, 21st.

Pretty Prairie, Kansas, 4th, 7th.

Indianola, Texas, 6th, 11th, 12th.

MISCELLANEOUS PHENOMENA.

SUNSETS.

The characteristics of the sky, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal-Service stations. Reports from one-hundred and seventy-two stations show 5,306 observations to have been made, of which eight were reported doubtful; of the remainder, 5,298, there were 4,503 or 85.0 per cent., followed by the expected weather.

METEORS.

Johnson, Nemaha county, Nebraska.—At 8.30 p. m. of the 5th, a bright meteor was observed about 15° south of the zenith. It passed nearly due north and disappeared at a point about 30° north of the zenith. The meteor was apparently about the size of a man's head, with a bright yellow nucleus surrounded by a reddish tinge.

Little Rock, Arkansas.—A brilliant meteor of violet color was observed here at 8.15 p. m. of the 14th. It first appeared at a point near the zenith, and moved in a northwesterly direction. Before disappearing the meteor separated into two parts, both of which remained visible for about one second.

Nashville, Tennessee.—At 11.16 p. m. of the 16th, a bright meteor of deep blue color was observed to pass from the zenith toward the southeastern horizon. Another brilliant meteor was seen at this station at 9.45 p. m. of the 26th.

Meteors of less brilliancy were seen at the following stations: Bethel, Connecticut, 11th.

Ames, Iowa, 12th.

Cedar Rapids, Iowa, 31st.

Woodstock, Maryland, 6th, 25th, 31st.

Rowe, Massachusetts, 25th.

Lansing, Michigan, 2d, 3d.

Visalia, California, 2d, 17th, 23d, 26th, 27th, 28th, 31st.

SUN SPOTS.

The following record of sun spots for the month of May, 1883, has been forwarded by Mr. D. P. Todd, Director of the Lawrence Observatory, Amherst, Massachusetts:—

Date— May, 1883.	No. of new		Disappeared by solar rotation.		Reappeared by solar rotation.		Total No. visible.		Remarks.
	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	
1, 7 a. m.	0	2	0	0	0	0	3	10	
2, 10 a. m.	0	0	0	0	0	0	3	7	
2, 5 p. m.	0	0	0	0	0	0	3	7	
3, 5 p. m.	2	3	0	0	1	1	2	10	
6, 2 p. m.	0	3	0	0	0	0	2	7	
7, 9 a. m.	0	0	0	0	0	0	2	9	
8, 9 a. m.	0	0	0	0	0	0	2	9	
10, 5 p. m.	2	5	0	0	2	5	4	14	{ Spots probably reappear-
11, 5 p. m.	0	2	0	4	0	0	4	12	ed by solar rotation.
12, 10 a. m.	0	1	0	2	0	0	4	9	
13, 11 a. m.	0	0	1	2	0	0	3	7	
14, 10 a. m.	1	5	0	0	0	0	4	12	
16, 10 a. m.	0	0	1	2	0	0	3	10	{ Spots probably disappear-
17, 10 a. m.	1	2	0	0	0	0	4	11	ed by solar rotation.
18, 10 a. m.	0	0	0	0	0	0	4	11	
19, 4 p. m.	1	3	0	2	0	0	5	12	
24, 7 a. m.	1	2	0	0	1	2	1	2	{ Spots probably reappear-
25, 10 a. m.	0	0	0	0	0	0	0	0	ed by solar rotation.
26, 11 a. m.	0	0	0	0	0	0	0	0	
27, 2 p. m.	0	0	0	0	0	0	0	0	
28, 11 a. m.	0	0	0	0	0	0	0	0	No faculae.
29, 4 p. m.	1	1	0	0	0	0	1	1	do.
30, 10 a. m.	0	0	0	0	0	0	1	1	
31, 10 a. m.	1	3	0	0	1	2	2	4	

Faculae were seen at the time of every observation, unless otherwise indicated.

EARTHQUAKES.

Helena, Montana, 4th.—A slight shock of earthquake occurred at this place at about 11.45 a. m., the wave moving from east to west. It affected the public school building, producing a rocking motion, and causing some alarm among the pupils. Houses in several parts of the city experienced the shock.

Catlettsburg, Boyd county, Kentucky.—Two distinct shocks of earthquake were felt at this place at 11.30 p. m. of the 22d.

The following extract is taken from "Nature" of May 10th, 1883: "A strong earthquake shock, with an undulating motion, was felt at Biancaville, Sicily, on the morning of the 8th."

Victoria, British Columbia.—A severe shock of earthquake was felt at this place during the night of the 10th. The movement was from north to south.

The barge "Inga," Captain Olsen, commanding, which arrived at New York June 1st, from Padang, Sumatra, reported that on February 14th, 1883, while eighty-four miles north-northwest of the island of Engauo, an earthquake shock was felt. The vessel trembled, and the sea became a white foam, like the breaking of a school of fish. There was no wind at the time.

SAND-STORMS.

Fort Garland, Colorado, 29th.

Fort Union, New Mexico, 6th.

Yuma, Arizona, 6th, 12th, 13th, 14th, 16th.

San Carlos, Arizona, 12th.

POLAR BANDS.

West Washington, District of Columbia, 17th.

Guttenburg, Iowa, 22d.

Yates Centre, Kansas, 22d, 25th, 27th.

Gardiner, Maine, 13th, 14th.

Somerset, Massachusetts, 26th.

Clear Creek, Nebraska, 25th.
 Vineland, New Jersey, 25th.
 Wytheville, Virginia, 17th, 19th, 20th.
 Charleston, South Carolina, 25th.
 Punta Rassa, Florida, 24th.
 Memphis, Tennessee, 24th.
 Los Angeles, California, 5th.
 Cape Mendocino, California, 4th, 20th, 24th, 31st.
 Woodstock, Vermont, 1st, 11th.

ZODIACAL LIGHT.

Cambridge, Massachusetts, 2d, 3d, 6th, 8th, 27th, 29th.
 Northport, Michigan, 15th.
 Wauseon, Ohio, 5th, 7th, 12th, 26th.
 Cape Lookout, North Carolina, 3d.
 Punta Rassa, Florida, 2d, 3d, 4th.
 Pensacola, Florida, 23d.
 Vicksburg, Mississippi, 29th.
 Palestine, Texas, 2d, 5th, 6th, 23d.
 Little Rock, Arkansas, 6th.
 Nashville, Tennessee, 1st, 2d, 3d, 5th, 7th, 8th, 24th to 28th.
 Prescott, Arizona, 1st to 8th, 24th to 31st.

PRAIRIE AND FOREST FIRES.

Marshfield, Plymouth county, Massachusetts, 1st.—A disastrous fire occurred on the Marshfield plains. It is estimated that three thousand acres of woodland were burned over.

Concord, New Hampshire, 18th.—A disastrous fire occurred in "dark plains", east of this city, at noon. The flames swept over about five hundred acres of land, a large part of which was covered by a heavy growth of valuable timber, and about five hundred cords of wood. The damage is estimated at \$5,000.

Woodville, Grafton county, New Hampshire, 18th.—Forest fires have burned over 1,000 acres of land in this vicinity. In Hall's woods, seven miles from this place, the fires burned over an area of 2,000 acres and destroyed 4,000 cords of wood. At Barnstable a large tract of woodland was burned over, and

much cord-wood was destroyed. The fires also raged on Blue Terry mountains and on Mount Webster.

Lancaster, Coos county, New Hampshire.—A fire originated in the woods on Cherry mountain during the 19th, and spread over a large area, destroying timber valued at \$10,000. A saw mill together with a large quantity of logs, lumber, and cord-wood were also burned.

Montpelier, Vermont.—The most disastrous forest fire that ever occurred in this state, originated in the vicinity of Groton, Caledonia county, on the 19th. An extensive area was burned over and a large amount of property destroyed. The loss is estimated at \$150,000.

Less extensive prairie and forest fires occurred as follows:

Alexandria, Dakota, 10th, 21st.
 Yankton, Dakota, 7th, 16th, 22d, 24th, 28th, 30th.
 Fort Stevenson, Dakota, 3d, 15th.
 Milton, Massachusetts, 13th.
 Somerset, Massachusetts, 18th, 19th.
 Williamstown, Massachusetts, 1st.
 Indianola, Texas, 13th, 21st, 22d, 27th.
 Saint Vincent, Minnesota, 16th.
 Fort Bayard, New Mexico, 6th, 26th, 27th, 28th.
 Mount Washington, New Hampshire, fires in northwest, 18th, 19th.
 North Platte, Nebraska, 9th.
 Moorhead, Minnesota, 16th.

MIGRATION OF BIRDS.

Geese flying northward.—Alexandria, Dakota, 1st; Bismarck, Dakota, 6th; Clear Creek, Nebraska, 20th; Albany, Oregon, 8th; Grand Haven, Michigan, 3d, 5th; Roseburg, Oregon, 3d.
Flying southward.—Yuma, Arizona, 29th. *Flying west.*—Yuma, Arizona, 23d.

Ducks flying northward.—Clear Creek, Nebraska, 20th.

NOTES AND EXTRACTS.

The following summary is taken from the May report of the "Illinois Meteorological Service."

Summary of meteorological observations for the month of May, 1883, made to the Illinois Department of Agriculture, Springfield, June 1, 1883. Hours for taking observations: 7 a. m., 2 p. m., 9 p. m.

Stations.		Elevation above sea—feet.	Thermometer.						Barometer.						Wind.		Rain.		No. of days on which cloudiness averaged 0.8 or more.	Mean humidity.
County.	Post office.		Highest.	Lowest.	Mean.	Range of.	Highest daily mean.	Lowest daily mean.	Highest.	Lowest.	Mean.	Range of.	Highest daily mean.	Lowest daily mean.	Prevailing direction.	Max. velocity or force in miles per hour.	No. of days on which rain or snow fell.	Total rainfall.		
Northern division.																				
Cook	Chicago	657	80.10	35.90	52.10	44.20	70.40	38.10	30.290	29.484	29.624	0.806	30.177	29.573	N.	5	18	7.32	69.3	
Kane	Aurora	676	85.00	34.00	56.10	51.00	72.06	39.33	30.260	29.470	29.890	0.790	30.160	29.560	N.W.	5	18	7.23	77.0	
McHenry	Marengo	925	81.00	30.00	52.40	51.00	72.00	37.00							N.W.	7	15	6.18		
Ogle	Polo		81.00	29.00	52.45	52.00	70.00	35.00							W.		16	6.14	14	
Peoria	Peoria	460	87.00	35.00	60.70	52.00			29.894	29.068	29.543	0.796			S.	5	15	6.54	68.0	
Warren	Monmouth	700	86.00	34.00	59.76	52.00	73.00	48.00	29.700	28.890	29.377	0.810			N.W.	4	14	5.32	12	
Whiteside	Morrison	970	82.00	32.00	55.82	50.00									N.W.	0	15	4.78	10	
Stark	Elmira		83.00	36.00	54.98	47.00											11	4.31		
De Kalb	Sycamore	800	80.20	34.00	53.13	46.20	74.30	38.00							N.W.	6	15	8.55	18	
Lee	Prudenville	725	80.00	30.00	57.80	44.00	75.10	45.20	30.150	29.360	29.810	0.790	30.081	29.440	N.	5	13	7.01	10	
Central division.																				
Christian	Pana	760	85.00	40.00	62.50	45.00	70.50	48.00							N.W., S.W.	5	8	4.31	20	
Coles	Mattoon	724	86.00	32.00	61.00	54.00	75.00	49.50							S.		14	4.15	8	
Logan	Atlanta	810	88.00	29.00	57.10	59.00	74.00	38.00							S.W.		14	5.59	7	
Pike	Griggsville	625	88.00	31.00	58.00	57.00	75.00	38.00	30.45	29.030	30.010	0.820	30.340	29.700	S.W., N.W.	5	13	6.60	12	
Sangamon	Springfield	640	87.00	33.90	60.10	53.10	72.50	40.80	30.301	29.500	29.936	0.801	30.236	29.606	S.	5	16	6.60	65.2	
Southern division.																				
Alexander	Cairo	377	83.50	38.00	65.20	45.50	76.80	43.80	30.349	29.677	30.013	0.672	30.286	29.745	S.W.	6	12	3.85	66.4	
Bond	Greenville		91.00	34.00	63.40	57.00	80.30	42.00							N.		9	6.25	18	
Crawford	Palatine		86.00	38.00	58.51	48.00	76.25	41.25							N.	5	10	2.09	8	
Hamilton	McLeansboro		86.00	35.00	63.00	51.00	76.70	41.20							S.W.		12	5.20	10	
Pope	Golconda		84.00	40.00	68.00	44.00	75.50	41.25							N.W.	6	12	7.13	9	
Saint Clair	Mascoutah		84.00	31.00														6.20		
Union	Anna	625	85.00	32.00	64.74	53.00			30.250	29.680	30.010	0.570			N.W., N.E., S.W.	4	10	6.64	9	

Dr. Gustavus Hinrichs, director of the "Iowa Weather Service," has forwarded the following advance proof of his report for May, 1883:

May, 1883, was remarkably cold, very rainy, with late frosts, westerly and northerly winds prevailing.

The mean temperature of the air was nearly five degrees below normal; in forty-five years May has been six times as cold or colder than this year,